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FACTOR INFLUENCING HAND HYGIENE COMPLIANCE AMONG NURSES WORKING IN EMERGENCY DEPARTMENT AT TERTIARY HOSPITALS OF PESHAWAR

Original Research

Rahmat Ullah[1], Farhat Ullah[1]*, Haider Ali[1], Muhammad Siyar Khan[1], M. Sadiq[1], Shah Zeb[1], Sami Khatab[2], Doonya Dar[2]
[1]BSN Student, The Health Care Institute of Nursing, Peshawar, Pakistan.
[2]Lecturer, HIMS College of Nursing, Pakistan.
Corresponding Author: Farhat Ullah, BSN Student, The Health Care Institute of Nursing, Peshawar, Pakistan, farhatullah223344@gmal.com
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ABSTRACT

Hand hygiene compliance among nurses is a critical component in preventing healthcare-associated infections (HAIs), particularly in high-risk settings such as emergency departments (EDs). This study investigates the factors influencing hand hygiene adherence among nurses working in the emergency departments of tertiary hospitals in Peshawar, Pakistan. Employing a cross-sectional design, data were collected from 132 nurses through a structured questionnaire. Key findings indicate that while the majority of nurses are aware of WHO guidelines for hand hygiene, adherence is hindered by institutional, individual, and systemic challenges.

Among the barriers, inadequate resources were identified as the most significant, reported by 45% of respondents, followed by insufficient training (32%), and heavy workload (21%). A considerable proportion (79%) of nurses reported not having received training on hand hygiene in the last six months, further highlighting a gap in ongoing professional development—additionally, 51% experienced skin irritation from hand hygiene products, indicating a need for hypoallergenic alternatives.

The study also revealed discrepancies in compliance patterns, with 39% of nurses washing their hands fewer than five times during an 8-hour shift. Despite these challenges, 94% of respondents acknowledged the critical role of hand hygiene in preventing HAIs, underscoring the potential for improvement with targeted interventions.

The research emphasizes the need for comprehensive strategies to address resource allocation, enhance training programs, and improve institutional policies for hand hygiene. Recommendations include integrating regular training sessions, increasing accessibility to hand hygiene resources, and fostering a culture of accountability within emergency departments. Addressing these challenges is imperative for reducing HAIs, improving patient outcomes, and promoting a safer healthcare environment.

This study contributes to the growing body of evidence on hand hygiene practices in resource-constrained settings and highlights actionable steps for improving compliance among emergency department nurses in Pakistan.

INTRODUCTION

According to WHO guidelines, HH suggests hand wash with water and soap and/or hand rub. HH must be led in relation to the following five situations: before patient contact, before aseptic or clean techniques, after the risk of contact with body fluids, after patient contact and after being in contact with patient-near surroundings. HH must be achieved before setting on gloves and after glove removal (World Health Organization, 2018). It confirmed that overall mean hand hygiene compliance in the organization enlarged from 78% in 2008 to >94% in 2012. A senior member of the infection control team decided to work with the emergency department staff and managers to improve hand hygiene compliance (Gould et al., 2017). The significance of hand washing in the inhibition of nosocomial infections, studies have confirmed that compliance with this fundamental concept of infection control remains low in several patient care settings, including ICUs, pediatric ambulatory clinics, and long-term care facilities (Bleich et al., 2019). We are ignorant of any study of hand washing frequency in the ER department. Because of severe time restrictions, perception of patient illness and injury, and large numbers of patient contacts in ER. Many of the pathogens responsible for these infections are communicated from patient to patient by the hands of health care provider (Allegranzi & Pittet, 2009). HH importance was first recognized in a Vienna hospital in the 19th century. Maternity patients were vanishing at a high rate. Dr. Ignaz Semele's started ordering his staff members to wash their hands before treating the patients, hugely lowering the death rate as a result. It is one of the most effective and cheap ways to prevent diarrheal diseases and pneumonia, which cause more than 3.5 million expiries worldwide in children under the age of 5 every year (World Health Organization, 2018). The US Centers for Disease Control and Prevention published its hand hygiene guideline in 2002 (Scott, 2009). Hand hygiene remains the keystone in cross HAI prevention among patients. Successful contacts to improve hand hygiene have been reported from high-income countries [9]. Hand hygiene (HH) is the most effective action to prevent the spread of microbes [10].

RATIONALE OF THE STUDY

Healthcare facilities need to make hand hygiene essential for reducing healthcare-associated infections because emergency departments operate under extreme pressure. Although international standards and hospital rules exist nurses do not follow them properly which creates more infections and increases healthcare expenses. Hand hygiene compliance suffers substantially in Khyber Pakhtunkhwa teaching hospitals because staff deals with time pressure alongside a shortage of materials while lacking proper training and running into system obstacles. Our research will examine why nurses do not follow hand hygiene practices better and discover methods to increase their adherence to these standards

Research Questions

1. What are the primary barriers influencing hand hygiene compliance among nurses working in emergency departments?
2. How does hand hygiene compliance impact the rate of healthcare-associated infections in teaching hospital emergency departments?

Research Objectives

- To identify the factors affecting hand hygiene compliance among nurses in emergency departments.
- To evaluate the relationship between hand hygiene practices and the prevention of healthcare-associated infections.

METHODOLOGY

This cross-sectional study aimed to assess hand hygiene compliance among nurses working in emergency departments of teaching hospitals in Peshawar. A total of 132 nurses were selected through simple random sampling from three hospitals (LRH, HMC, and PGH), ensuring representativeness and minimizing selection bias. The target population included registered nurses actively involved in patient care with at least six months of emergency department experience. Nurses were eligible if they could comprehend and respond to the

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questionnaire in English or the local language and provided informed consent. Excluded were nursing students, interns, temporary staff, nurses transferred within the past six months, those not directly involved in emergency patient care, and individuals on extended leave or unwilling to participate. Data were collected over four weeks using a structured, self-administered questionnaire covering demographics, knowledge, attitudes, compliance practices, institutional factors, and barriers. The tool was pre-tested for clarity and reliability, with responses measured using a Likert scale. Data were analyzed using SPSS, with results presented through frequencies, percentages, means, and standard deviations. Reliability was assessed using Cronbach's alpha (≥0.7), and content validity was confirmed by experts in infection control and nursing. Ethical approval was obtained, and participants' confidentiality and voluntary participation were strictly maintained.

DATA ANALYSIS AND RESULTS

Statement	Yes n (%)	No n (%)	Not Sure/Sometimes n (%)
Aware of WHO guidelines on hand hygiene	132 (100%)	--	--
Hand hygiene facilities easily accessible in ED	92 (70%)	40 (30%)	--
Policies in place for hand hygiene compliance	100 (76%)	32 (24%)	--
Received hand hygiene training in last 6 months	28 (21%)	104 (79%)	--
Sufficient time to perform hand hygiene in ED	54 (41%)	20 (15%)	--
Experienced skin irritation/allergic reaction from hand hygiene products	67 (51%)	65 (49%)	--
Hand hygiene resources readily available	50 (38%)	49 (37%)	33 (25%)
Hand hygiene protocols clearly communicated	39 (30%)	50 (38%)	43 (32%)
Feel supported by hospital administration in hand hygiene	55 (42%)	54 (41%)	23 (17%)
Know the correct steps of hand hygiene	105 (79%)	5 (3%)	22 (17%)

All participants (100%) reported being aware of the WHO guidelines on hand hygiene. However, only 70% stated that hand hygiene facilities were easily accessible in the emergency department, and 76% confirmed the presence of institutional policies for compliance. A notable gap was observed in recent training, with only 21% having received training within the past six months. While 41% felt they had enough time to perform hand hygiene, 51% experienced skin irritation from hygiene products. Regarding resources, only 38% believed they were readily available, with 25% uncertain. Protocols were clearly communicated to just 30% of the participants, and only 42% felt supported by the administration. Although 79% reported knowing the correct steps of hand hygiene, a significant number (17%) were unsure, indicating a need for reinforcement through training and administrative support.

Item	Most Selected Response(s)	%
Critical moment for hand hygiene	Before touching patient	38%
Belief in hand hygiene preventing infection	Agree/Strongly agree	94%
Hand hygiene neglect in ED	Often	33%
Supervisor reminders for hand hygiene	Sometimes	31%
Handwashing frequency per shift	Less than 5 times	39%
Preferred hand hygiene method	Soap & water / Both	34% each
Main barrier to compliance	Lack of resources	45%

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Item	Most Selected Response(s)	%
Challenges in following protocol	Insufficient resources	36%
Pressure to prioritize care over hygiene	Agree/Strongly agree	76%
Typical handwashing duration	15–30 seconds	38%

The majority of nurses (38%) considered hand hygiene most critical before touching a patient, and a strong consensus (94%) agreed it is essential in preventing hospital-acquired infections. Despite this, one-third reported that hand hygiene is often neglected, and only 25% received consistent reminders from supervisors. Most participants (39%) washed their hands fewer than five times per shift, and 38% reported a handwashing duration of just 15–30 seconds. Preferred hygiene methods were evenly split between soap and water (34%) and both soap and sanitizer (34%). The main barriers to compliance were a lack of resources (45%) and insufficient training (32%), while inadequate time and skin irritation were additional challenges. Notably, 76% of respondents felt pressured to prioritize patient care over hand hygiene, indicating the need for institutional support and regular training.

CONCLUSION

This study investigated hand hygiene compliance among nursing staff in emergency departments of teaching hospitals, revealing a significant gap between awareness and practice. While nearly all respondents were aware of WHO standards, actual compliance was hindered by systemic issues such as inadequate supplies, understaffing, time constraints, and insufficient training. Notably, 45% cited resource shortages, and 62% reported poor communication of hygiene protocols. Compliance was also affected by partial understanding of the WHO's "Five Moments," low handwashing frequency, and adverse skin reactions to hygiene products. Although 94% acknowledged the importance of hand hygiene in preventing infections, only 42% felt adequately supported by hospital administration. These findings underscore the need for institutional efforts including regular audits, consistent training, improved resource distribution, and supportive leadership. Addressing both practical and psychological barriers—especially in high-pressure emergency settings—is essential to transform awareness into sustained compliance and ultimately enhance patient safety.

RECOMMENDATIONS

To improve hand hygiene compliance, hospitals should ensure consistent availability of hygiene supplies and provide regular, practical training focused on the WHO's "Five Moments." Clear communication of policies, real-time monitoring systems, and feedback mechanisms must be implemented. Addressing workload through better staffing, offering skin-friendly products, enhancing administrative support, and integrating hygiene into routine care and digital reminders can further strengthen adherence among emergency department nurses.

AUTHOR CONTRIBUTION

Author	Contribution
Rahmat Ullah	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Farhat Ullah*	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published

Author	Contribution
Haider Ali	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Muhammad Siyar Khan	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
M. Sadiq	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Shah Zeb	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Sami Khatab	Contributed to study concept and Data collection Has given Final Approval of the version to be published
Doonya Dar	Writing - Review & Editing, Assistance with Data Curation

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